

**INSTALLATION AND OPERATING INSTRUCTIONS
HUMIDIFIERS**

**ULTRASONIC HUMIDIFIER WITH
CONTINUOUS VARIABLE CAPACITY**



HU-25(OG)



HU-45(OG)



HU-85(OG)



HU-245(OG)

PREFACE**IMPORTANT**

The apparent simplicity of this equipment often invites the user to install it himself. The manufacturer however can not be held responsible for installation faults and we strongly advise the user to consult and use only qualified technicians.

This manual gives operation, installation, and maintenance instructions for the ultrasonic humidifier type HU-25(OG), HU-45(OG), HU-85(OG), HU-245(OG).

The first sections up to and including "Packing" and the section "Maintenance" provide essential information for the user of the humidifier.

The sections from "Installation instructions" to "Parts replacement" provide information for installers and repair services.

IMPORTANT NOTE FOR INSTALLERS

Although installation of this product may seem very easy, these instructions should be read carefully before undertaking an installation as the equipment has some special features and failure to comply with the instructions will invalidate the warranty.



We, of Contronics Engineering b.v., Ambachtsweg 8, 5492 NJ St. Oedenrode, The Netherlands, declare that the product HU-40, produced and delivered by Contronics Engineering b.v., is in accordance with the following rules:
EN50081-1, EN50082-1, EN60555-2, EN60555-3, EN55014, EN55022,
EN60204-1 according definitions of 73/23/ECC and 89/336/EEC directives

Contronics constantly works on further developement of its humidifiers. Therefore we reserve the right to alter design and to carry out improvements to the technology of the product at any time. No claims can be made based on the data, figures or descriptions in these instructions.

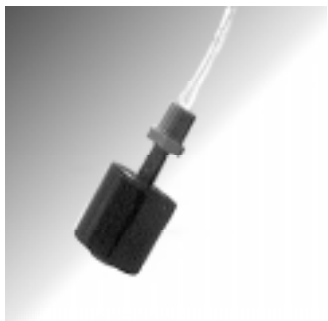
For more information or support: +31 413 473901



WKLEPAFV: Drain valve



VENTRADIOAL: Fan radial
(HU-25, HU-45, HU-85)
VENTRADIOAL-101: Fan radial
(HU-245)



SFLSOLV2A1: Floating switch



WARNING

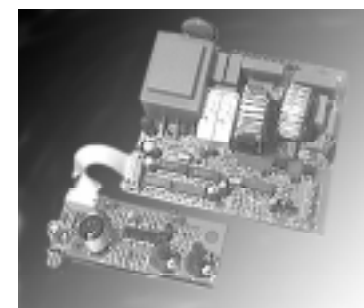
It is possible that the feedwater to the humidifier is infected with bacteria. Some of these bacteria could be dangerous for health when they get into the aerosols that the humidifier produces. Contronics did the utmost to prevent bacteria growth inside the humidifier by design, flushing program and material used. To guarantee hygienic feedwater we recommend the use of demineralised water (R/O units see our supply program). In situations with bacteria in the ambient air (displays for meat) or in warm ambient air (bakeries) we recommend also the use of an ozone generator (see our supply program). Contronics cannot be held responsible for damage due to bacteria or microorganisms.

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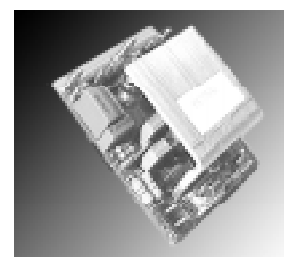
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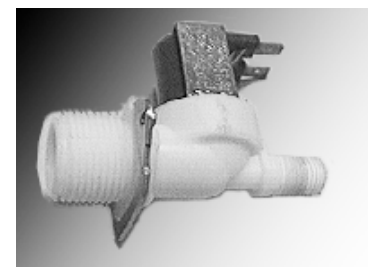
MU-10TRA: Transducer



HP HU-25P: Control Print



HP MU-25P: Driver print for MU-10TRA



WKLEP: Water supply solenoid valve



LP-10: Omgekeerde osmose

INTRODUCTION

Principle of ultrasonic humidification

By means of high frequency vibrations (ultrasonic), small water particals of 1 tot 3 microns are being thrown above the water surface. An air flow through the humidifier carries the water particals into the space which has to be humidified

A minimum use of energy, minimal maintenance and minimal noise are among the most important advantages of this method of humidification.

Continuous Variable Humidification (CVH)

The HU-25 has a control knob to adjust the misting capacity between zero and the maximum. If the humidity sensor is plugged into the humidifier, the function of the control knob will become an rH setpoint adjuster which can adjust the desired humidity between 35% and 95% rH. The CVH-system will then control the humidification proportionally about the setpoint. If more than one unit is linked together, then these units will all be controlled equally. The humidifier will then run continuously, keeping rH at setpoint level. Instead of controlling the HU-25 with a humidity sensor it is also possible to control the humidifier externally (0-10V) for instance with the Contronics Hygrostat DZR-43.

Capacity

The HU can be extended with any number of modules linked to the "master". This means that with one master HU-25 and a number of slaves an unlimited capacity can be achieved. Due to the very high frequency of 1,7 MHz the water particals are very small, so they will evaporate in a very short time and not precipitate in the distribution pipes from the humidifier to the area to be humidified.

Water quality

Although the humidifier can be connected with tap-water, Contronics recommends demineralised water. The maintenance of the humidifier will be minimal and the term of life of the transducers will be extended substantial. This will also prevent that lime, salts, minerals and bacteria, which are in tap-water, find their way in the area that has to be humidified. Contronics can deliver several reverse osmosis filters.

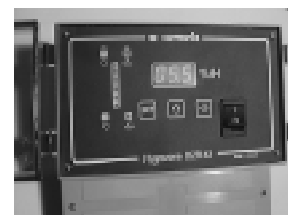
Disinfection

For situations where bacterial purity is necessary (food industry) it is possible to connect an ozone generator. Contronics has various ozone generators in their delivery program.

ACCESOIRES



HS-90P: Relatieve luchtvochtigheidssensor
RVS, $\pm 2\%$
Calibreerbaar
Instelbare reactietijd



DZR-43: Hygrozone dode zone hygrostaat



HK01: Aansluitsnoer + stekker voor externe sturing



HK02: Koppelkabel tussen modules

TECHNICAL SPECIFICATIONS HU-245

Transducer frequency	1.7 Mhz
Capacity at 25° water reservoir temperature	0-18 kg/hour
Life time transducers according to water hardness	10.000 hours (13 months continously)
Measuremet per water partical	1-3 micron
Diameter air outlet	2 x 110 mm
Diameter air inlet	80 mm
Airflow	Adjustable 0-60 m ³ /0Pa)
Maximum pipe lenght per outlet	6 meter
Main water pressure	1-6 Bar
Water connection	3/4" external
Maximum water hardness	8° German hardness (demineralised is strongly recommended)
Flushing frequency	Once per hour adjustable
Water drainage	3/4" external
Contents water tank	4000 cm ³
Mains supply	230V ± 10% 50/60Hz
Maximum load	1,3 KW
Ambient temperature	0 to 35 °C
Water temperature	5 to 15 °C
Air temperature	-5 to 35 °C
Ambient temperature/air temperature	Max. + 15K (max 75% rH
Measurements (L x W x H)	660x425x290
Weight	43 kg

HU-25OG (with build in ozone generator)

Capacity Ozone	0-20 mg/Hour (adjustable)
Switch Ozone	Timer with day program

SAFETY REGULATIONS

The humidifier has an open water reservoir. If this reservoir overflows, it may damage the electronics in the humidifier and the manufacturer can not be held responsible.

The following precautions should always be observed:

- **Always switch the 230V line voltage of the humidifier off before moving and/or doing maintenance activities**
- **Always keep the humidifier horizontal and immobile during and until 2 minutes after operation.**
- **Make sure that the water can always run freely through the drain.**
- **Never put fingers or objects in the rotating fan.**
- **When the humidifier is controlled externally by a 0-10V signal never connect the ground (=0) to earth.**

PACKING

The HU is delivered in packing materials which can be used again and which should be kept for forwarding and maintenance requirements. Shipments in other packing materials can cause damage to the HU, for which the manufacturer cannot be held responsible.

Some signs of water may be found in the packing as the HU will have been tested thoroughly for all functions during quality control and some water can remain in the HU before it is packed.

Each carton contains:

- The HU humidifier
- User manual
- Warranty card
- Mains cord

TECHNICAL SPECIFICATIONS HU-85

Transducer frequency	1.7 Mhz
Capacity at 25° water reservoir temperature	0-6,0 kg/hour (adjustable)
Life time transducers according to water hardness	10.000 hours (13 months continously)
Measuremet per water partical	1-3 micron
Diameter air outlet	2 x 80 mm
Diameter air inlet	80 mm
Airflow	Adjustable 0-60 m ³ /0Pa)
Maximum pipe lenght per outlet	6 meter
Main water pressure	1-6 Bar
Water connection	3/4" external
Maximum water hardness	8° German hardness (demineralised is strongly recommended)
Flushing frequency	Once per hour adjustable
Water drainage	1/2" external
Contents water tank	1500 cm ³
Mains supply	230V ± 10% 50/60Hz
Maximum load	450W
Ambient temperature	0 to 35 °C
Water temperature	5 to 15 °C
Air temperature	-5 to 35 °C
Ambient temperature/air temperature	Max. + 15K (max 75% rH
Measurements (L x W x H)	450x265x290
Weight	18 kg

HU-25OG (with build in ozone generator)

Capacity Ozon	0-20 mg/Hour (adjustable)
Switch Ozon	Timer with day program

TECHNICAL SPECIFICATIONS HU-45

Transducer frequency	1.7 Mhz
Capacity at 25° water reservoir temperature	0-3,0 kg/hour (adjustable)
Life time transducers according to water hardness	10.000 hours (13 months continously)
Measuremet per water partical	1-3 micron
Diameter air outlet	4 x 40 mm
Diameter air inlet	80 mm
Airflow	Adjustable 0-60 m ³ /0Pa)
Maximum pipe lenght per outlet	6 meter
Main water pressure	1-6 Bar
Water connection	3/4" external
Maximum water hardness	8° German hardness (demineralised is strongly recommended)
Flushing frequency	Once per hour adjustable
Water drainage	1/2" external
Contents water tank	650 cm ³
Mains supply	230V ± 10% 50/60Hz
Maximum load	250W
Ambient temperature	0 to 35 °C
Water temperature	5 to 15 °C
Air temperature	-5 to 35 °C
Ambient temperature/air temperature	Max. + 15K (max 75% rH
Measurements (L x W x H)	325x265x215
Weight	11,5 kg

HU-25OG (with build in ozone generator)

Capacity Ozon	0-20 mg/Hour (adjustable)
Switch Ozon	Timer with day program

CONNECTIONS AND FUNCTIONS

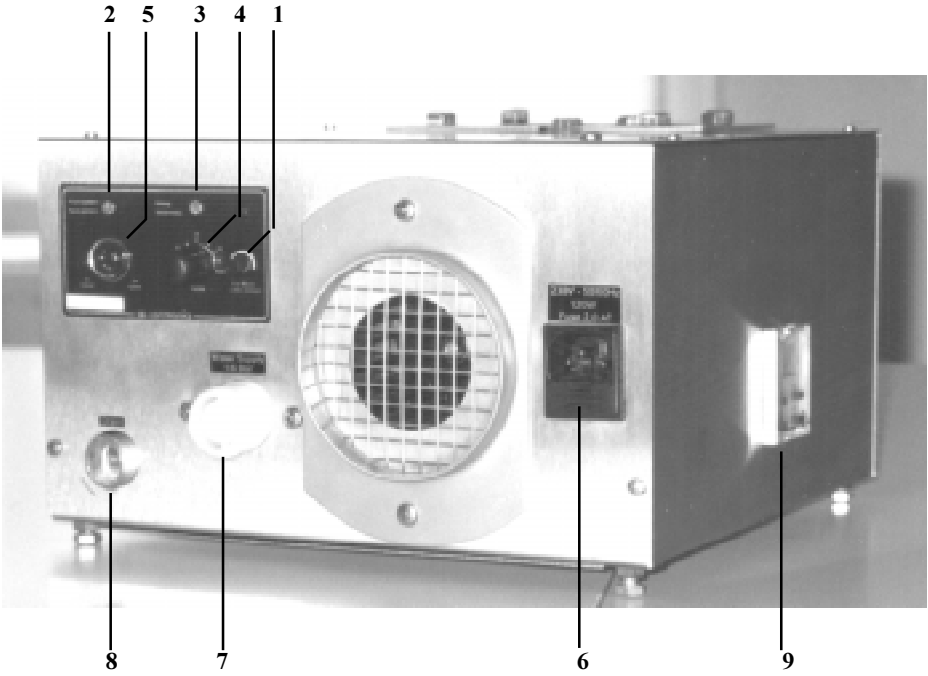


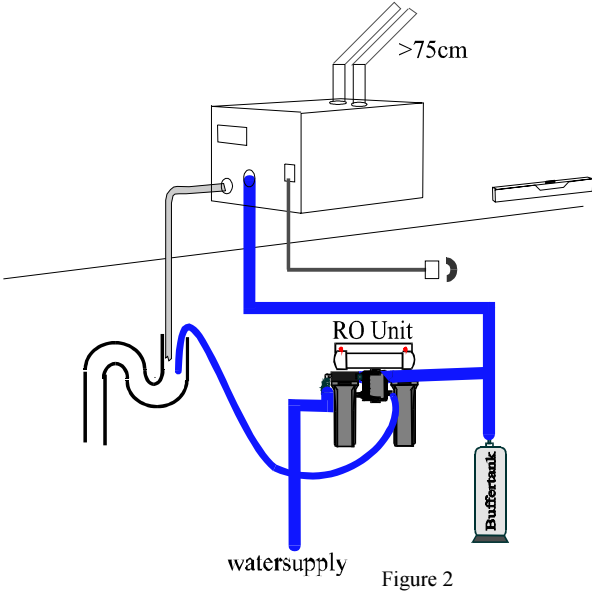
Figure 1

- 1. Turning knob for airspeed control
- 2. LED indication for flushing and alarm
- 3. LED indication for humidity control
- 4. Turning knob for humidity control
- 5. Connection plug for sensor, DZR-43, external control 1-10V or master / slave connection
- 6. Mains supply (230V ± 10% / 50-60Hz. 3,15AT.)
- 7. Water supply ¾", min. 1 BAR / max. 6 BAR
- 8. Water drain ½"
- 9. Timer for ozone generator (option)

INSTALLATION INSTRUCTIONS

IMPORTANT

When the humidifier is installed or used incorrectly the warranty will be rendered null and void.



1. Place the humidifier horizontal (2 dimensional). The adjustment bolts can be adjusted (15 mm)
2. Never place the humidifier on a closed tray with raised borders
3. Wire the humidifier in parallel with existing fans of the installation in which the humidifier is being placed; 230V±10% /50-60 Hz (when the fans are switched off the humidifier should be switched off as well)
4. If possible, only use demineralised water
5. Water pressure min. 1 Bar; max 6 Bar
6. Make sure there is a clean air flow without water droplets. The lower the airflow through the humidifier the better the result. The airflow channel must be unobstructed
7. Mist outlet should be inclined upwards
8. Both exhausts should always be in use. When you close-off one exhaust, the capacity will be reduced to 50%. The exhaust piping should be unobstructed (max. pipe-length 6m / exhaust, minimum pipe-length 75 cm.

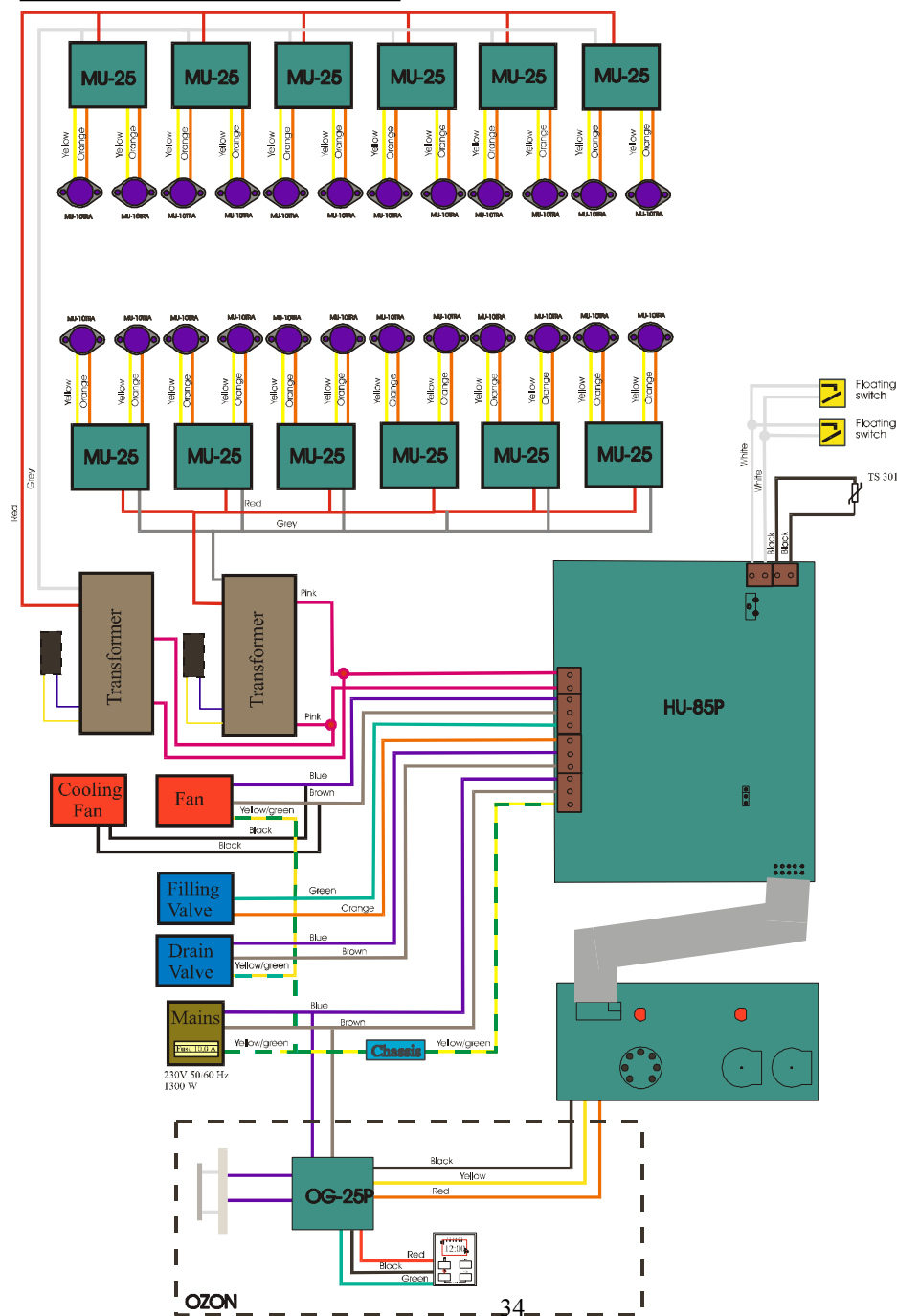
TECHNICAL SPECIFICATIONS HU-25

Transducer frequency	1.7 Mhz
Capacity at 25° water reservoir temperature	0-1,2 kg/hour (adjustable (with extension piece 1,5 Kg/hour)
Life time transducers according to water hardness	10.000 hours (13 months continously)
Measuremet per water partical	1-3 micron
Diameter air outlet	2 x 40 mm
Diameter air inlet	80 mm
Airflow	Adjustable 0-60 m³/0Pa)
Maximum pipe lenght per outlet	6 meter
Main water pressure	1-6 Bar
Water connection	3/4" external
Maximum water hardness	8° German hardness (demineralised is strongly recommended)
Flushing frequency	Once per hour adjustable
Water drainage	1/2" external
Contents water tank	300 cm³
Mains supply	230V ± 10% 50/60Hz
Maximum load	120W
Ambient temperature	0 to 35 °C
Water temperature	5 to 15 °C
Air temperature	-5 to 35 °C
Ambient temperature/air temperature	Max. + 15K (max 75% rH
Measurements (L x W x H)	270x260x160
Weight	8 kg

HU-25OG (with build in ozone generator)

Capacity Ozon	0-20 mg/Hour (adjustable)
Switch Ozon	Timer with day program

BLOCK DIAGRAM HU-245



ELECTRICAL CONNECTIONS

Mains supply (230V ± 10%)

When used in conjunction with external fans, the unit should be in line with the air flow and the humidifier connected in parallel with the fans, so that the same switch operates both fans and humidifier.

Sensor connection

Mount the humidity sensor vertically in a suitable spot to measure rH and connect the DIN-plug to the humidifier. When the sensor is placed in a cabinet, mount the sensor vertically on the wall in the air flow and close to the backward channel.

The humidifier is then controlled proportionally about the setpoint. The fan in the humidifier will switch off as soon as the rH is 10% higher than the setpoint, or at the bandwidth set on the DZR-43 hygrostat.

External control

The HU can also be controlled by an external control (0-10 Volt). Use the cable HK-01 for that purpose. The DIN-plug is connected to the humidifier. The humidifier then can be controlled by a voltage of 0 Volt (min.) to 10 Volt (max.).

The external signal has to be "floating" (no connection should be made to earth)

Remark: The output impedance of the external controller should not exceed 470Ω

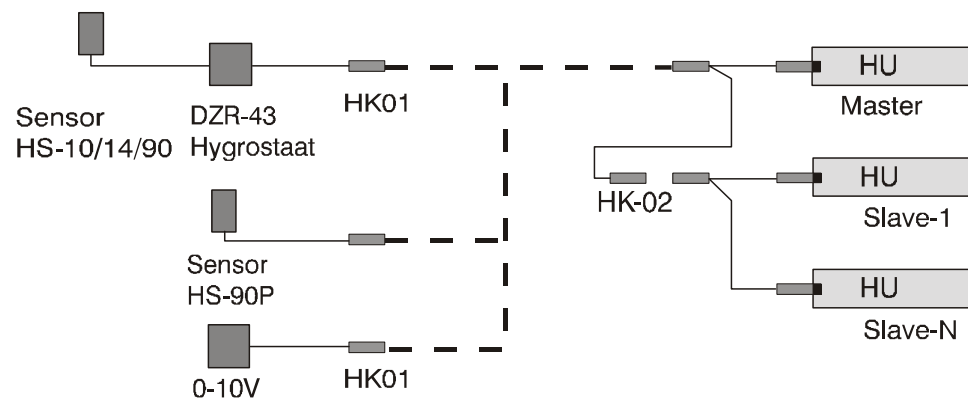


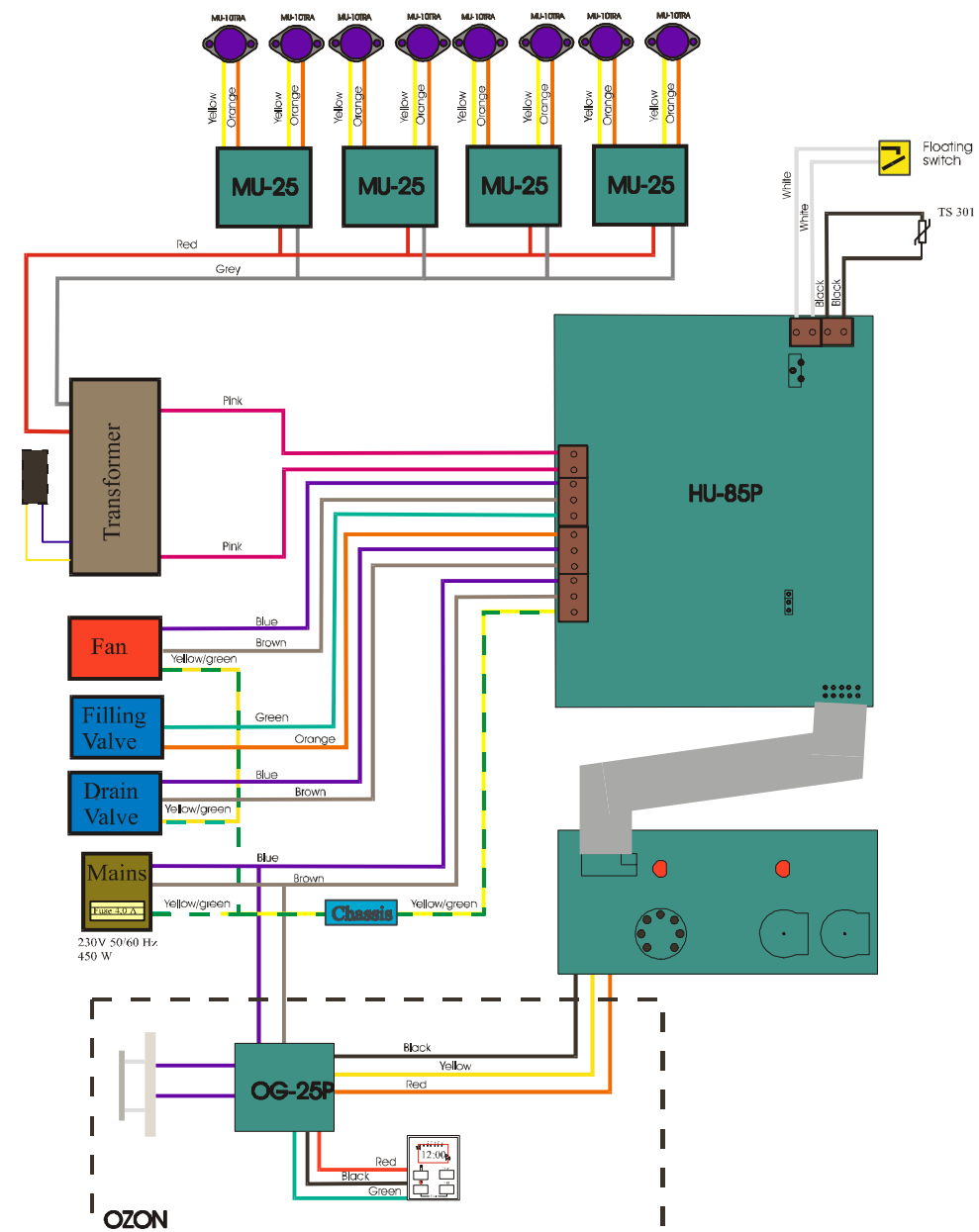
Figure 3

Master/slave connection

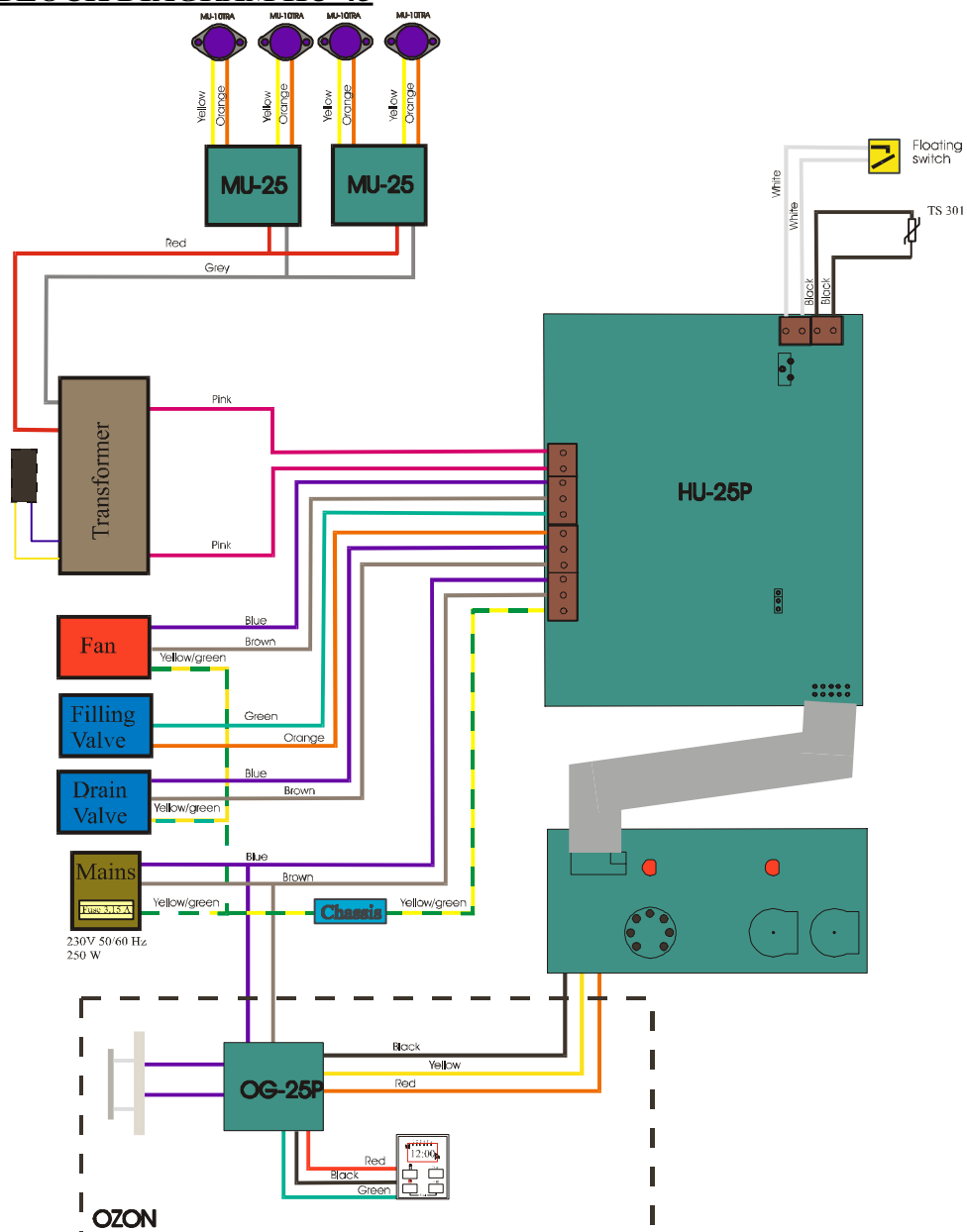
With a twin cable HK-02 several humidifiers can be coupled as a "slave" to the "master". This way several humidifiers can be coupled to one control of this "master" (Fig. 4) The master has to be calibrated. The "slaves" follow automatically the adjustment of the "master".

Each humidifier can be defined as a "master". The function is defined by the connection.

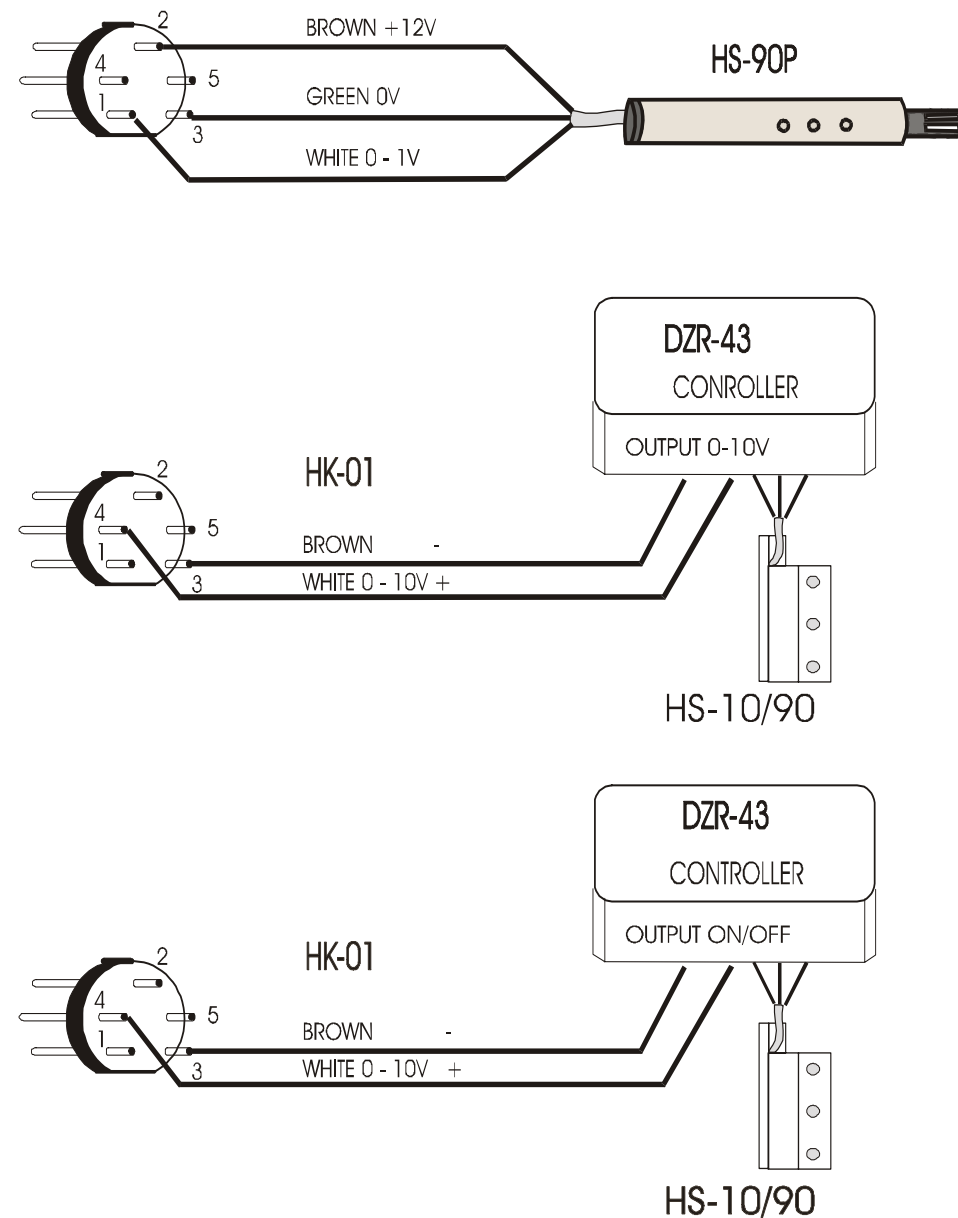
BLOCK DIAGRAM HU-85



BLOCK DIAGRAM HU-45



PLUG CONNECTIONS



WATER CONNECTIONS AND FLUSHING SYSTEM

Water supply and filter

The humidifier has a build in water reduction valve and can handle a water pressure up to 6 Bar. The water level in the humidifier is controlled by a floating switch and an electric water valve. We advise to use demineralised (RO) water.

The use of normal tap water will cause pollution of the transducers which will result in a shorter working life. At the same time the dissolved minerals in normal tap water will be blown in the room that has to be humidified together with the misting parts. Depending on the water hardness this can cause a dust layer after several days.

Water drainage

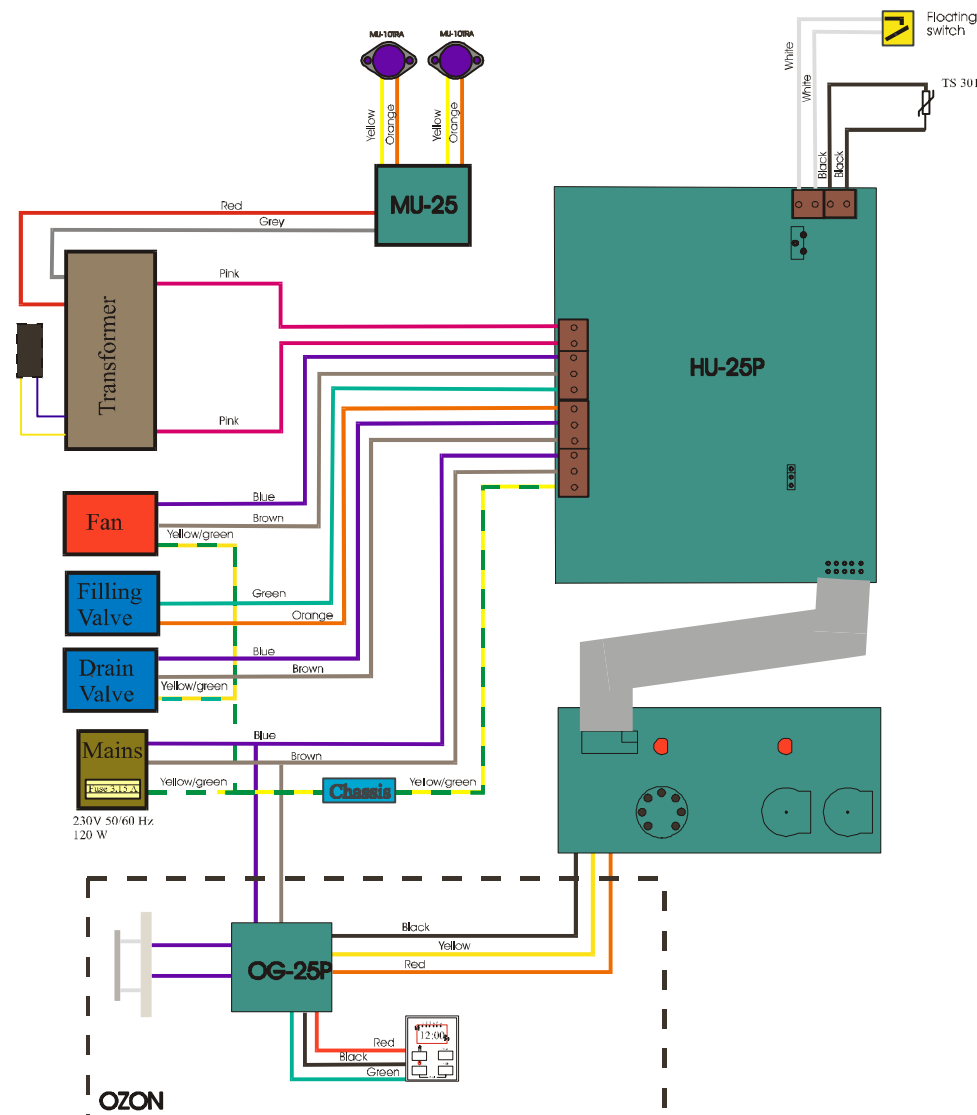
Connect a hose or pipe with a minimum length of 50 cm, diameter minimum 15 mm to the water drainage connection of the humidifier, so that the water contents of the humidifier can be drained down. This hose or pipe has to be without obstructions. The end should not be in the water. See figure 2. The water drain of the humidifier is without pressure.

IMPORTANT

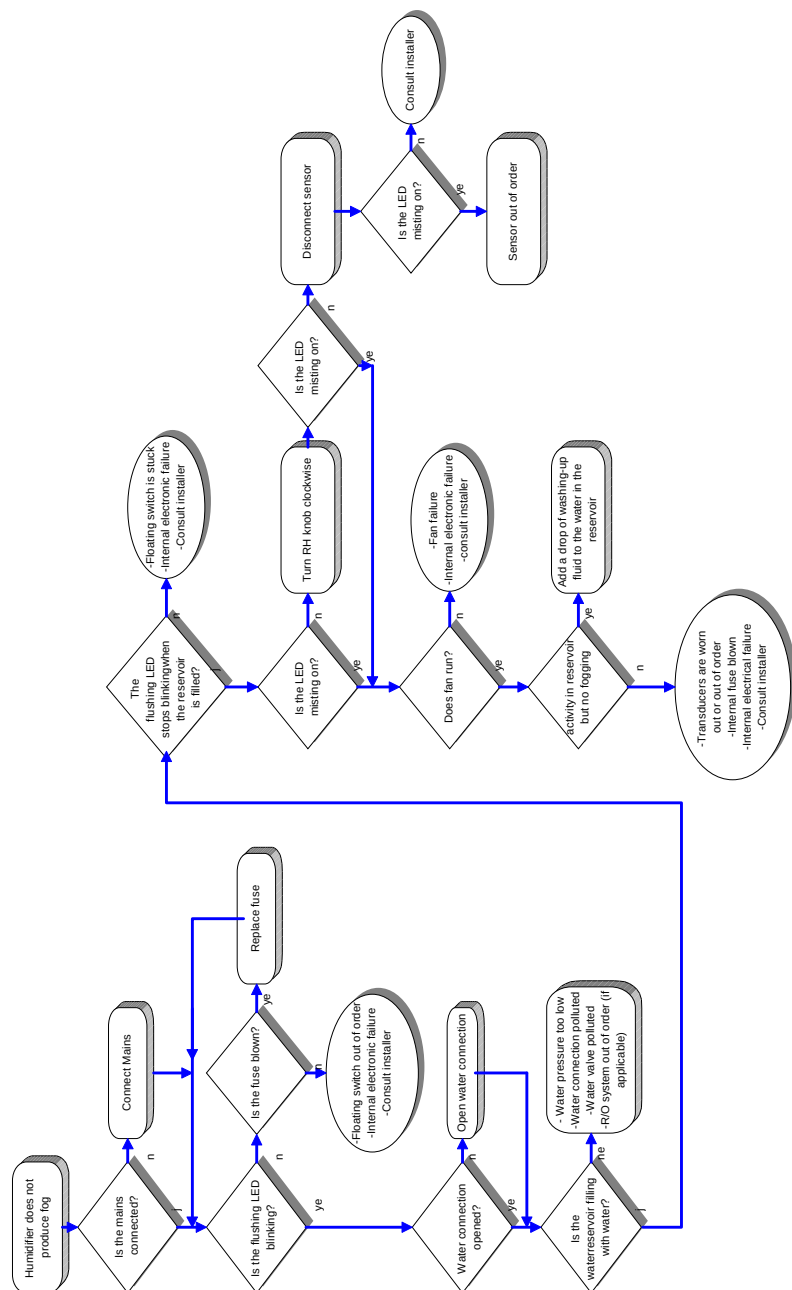
The connection of the water drain of the humidifier has to be the highest position of the drain pipe since it has no pressure. A blocked drain can damage the humidifier.

If there is a blocked drain the humidifier will overflow which is why one must never place the humidifier on a tray with raised borders. This can cause damage to the humidifier for which the manufacturer cannot be held responsible.

BLOCK DIAGRAM HU-25



MALFUNCTIONS



WATER CONNECTIONS AND FLUSHING SYSTEM

Water supply and filter

The humidifier has a build in water reduction valve and can handle a water pressure up to 6 Bar. The water level in the humidifier is controlled by a floating switch and an electric water valve. We advise to use demineralised (RO) water.

The use of normal tap water will cause pollution of the transducers which will result in a shorter working life. At the same time the dissolved minerals in normal tap water will be blown in the room that has to be humidified together with the misting parts. Depending on the water hardness this can cause a dust layer after several days.

Water drainage

Connect a hose or pipe with a minimum length of 50 cm, diameter minimum 15 mm to the water drainage connection of the humidifier, so that the water contents of the humidifier can be drained down. This hose or pipe has to be without obstructions. The end should not be in the water. See figure 2. The water drain of the humidifier is without pressure.

IMPORTANT

Never turn on the mains when the humidifier is not level or placed up side down because the transducers will burn.

Start up and functional test

- Open the water valve
- Set the % rH knob on maximum position
- Switch on the power and check if:
 - a. The water runs to the humidifier
 - b. The water flow stops after about 60 seconds
 - c. The production of mist starts after a few seconds
- Switch off the power and check if:
 - a. the water contents is emptied through the water drain
 - b. After about 1 minute the water reservoir is emptied completely
- Connect the water drain and verify it on leakage
- Switch on the main supply again
- Set the % knob in the desired position

Note: During start up and flushing (water filling) of the humidifier the LED “Flushing/alarm” will blink. This is a normal indication on the humidifier during this procedure.

IMPORTANT

When the humidifier is over heated it will flush, switch of and when it is cooled down, switch on automatically. When it is over heated the LED “Flushing/alarm” will blink.

Over heating can be caused by:

- Air supply blockade
- Exhaust blockade
- Too high air inlet temperature
- Too high water temperature
- Water drain blockade
- Too high ambient temperature

Cleaning the humidity sensor HS90P

Dismantle the sensor and flush it in clean water, let dry and remount in its original position. The sensor will recover between half an hour and 24 hours after cleaning. This depends on the rH and the airflow around the sensor. During this time the humidifier will not operate unless the sensor plug is temporarily taken out of the humidifier.

MAINTENANCE OZONE GENRATOR (OPTION)

The ceramic element should be cleaned once a year:

Disconnect the mains to the humidifier

Unscrew the side panel with the timer (6 pieces)

Take away the side panel and disconnect the wiring of the time.

Remove the upper and lower crosshead-screw of the stainless steel cover that is connected to the back aluminium sleeve.

Take the ceramic element out of the holder.

Clean it with alcohol.

When the metal on the ceramic plate shows disruptions, replace the ceramic plate.

Assemble again in the opposite way.

PARTS REPLACEMENT**Replacing the transducers**

The replacement of the transducers can only be done by Contronics or representatives specifically authorised by Contronics.

This maintenance should only be done by Contronics or representatives specifically authorised by Contronics. Unless this is the case the special 5 year warranty system will not apply.

MAINTENANCE

Depending on the water and air quality the humidifier has to be maintained every 12 months minimum. When the humidifier is used continuously, the transducers have to be replaced every 10.000 running hours (approx. 13 months)

Don't damage the transducers in the cleaning process

Before starting maintenance or before shipping check if:

- Mains is disconnected and the fan stopped rotating
- Water connection is closed
- Water is disconnected
- The sensor plug is disconnected
- The water reservoir is empty and the drainage hose is disconnected
- The humidifier remains horizontal during dismantling

Cleaning

- Remove the 4 M8 bolts of the top lid of the water reservoir
- Clean the water reservoir with a soft brush or cloth.

If necessary fill the reservoir with the household acid and let it absorb for 4-12 hours.

The filter of the cooling fan can be cleaned with water and soap. Make sure that it is dry before putting it on again.

Remove the filtercap in the water inlet of the humidifier. Clean and replace

Flush the internal drain with water or use a round brush..

APPLICATIONS FOR HUMIDIFIER HU-25**IMPORTANT**

1. **The water particles in the air supply pipe (channel) of the humidifier can damage the electrical circuit.**
2. **A restricted pipe construction can obstruct the air flow, damage the fan and cause the humidifier to overheat.**

Installation of a HU in a cabinet

The humidifier has to be placed in the middle of the length of the cabinet, below the cabinet.

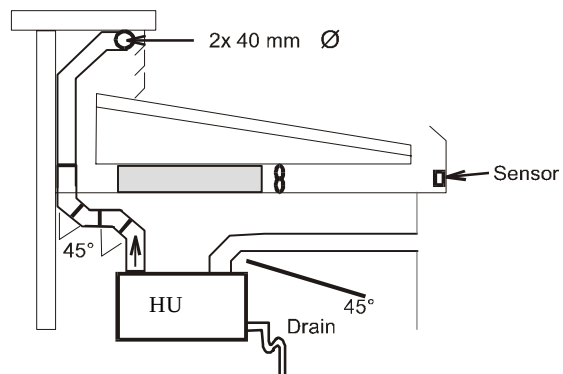
Air inlet

Connect an 80 mm pipe from the cabinet to the air inlet of the humidifier. The air of the cabinet to the air inlet of the humidifier should be as dry as possible. Normally the "air on" to the evaporator is the best choice. If the air is too cold and causes condensation, create an extra opening in the inlet pipe to draw in warmer air together with the cold air or use ambient air (In all cases where $de\ RH > 75\%$ and/or $\Delta T > 15$).

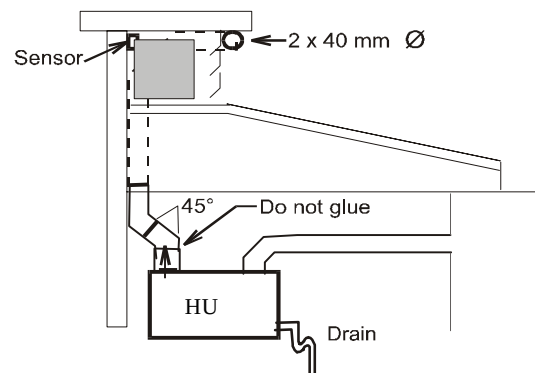
Mist outlet

- 1) In case of static or forced air flow, place a 40 mm pipe or fog distribution bar in the channel after the evaporator.
Drill 20 mm holes in line at 40 mm intervals. The holes in the pipe must point in the direction of the airflow and slightly upwards.
- 2) Connect the 40 mm pipe to the humidifier and ensure that the pipes are slightly sloped towards the humidifier so that any water runs down to the humidifier (figure 6.)
- 3) Mount a heating ribbon in the distribution pipe whenever freezing conditions occur

Build in HU in Cabinet with forced cooling.



Build in HU in Cabinet with static cooling.



Front view

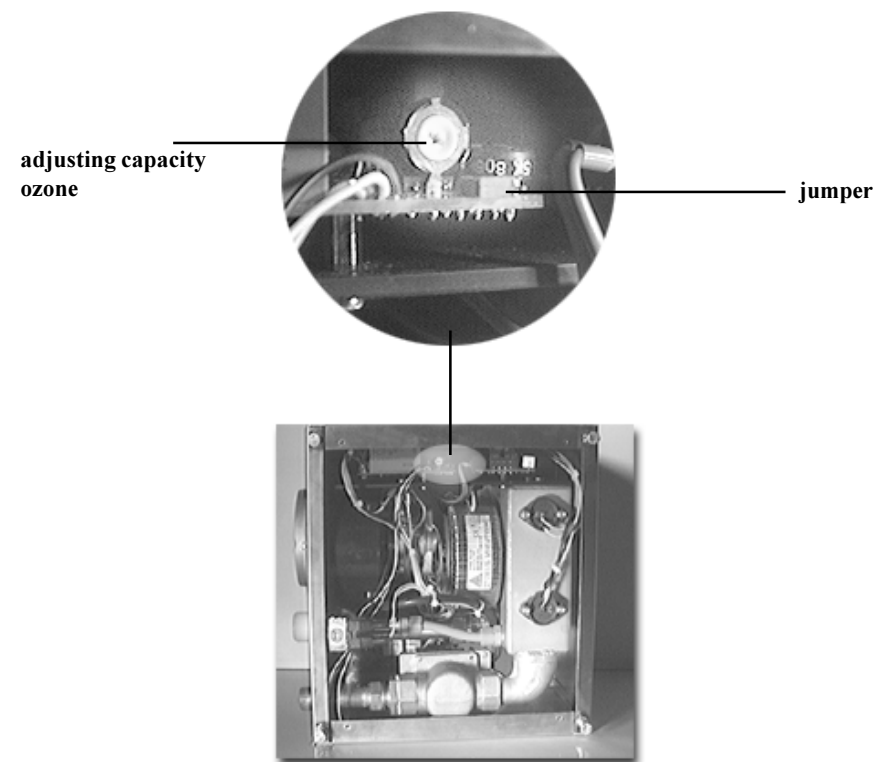
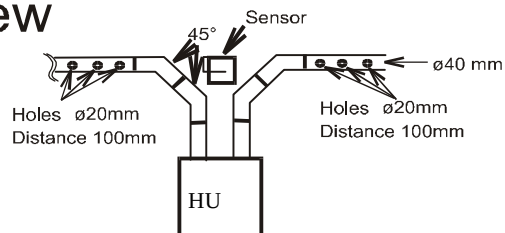


figure 10

General interest

The ozone mentioned in "air quality" reports, is the result of sunlight acting on exhaust fumes creating Ozone at street level in urban areas. If conditions allow this to build up faster than it degrades, people can experience discomfort.

The Ozone Layer in the atmosphere is unrelated and unaffected by the low concentrations being produced in food related generators

How is it made?

In practice dry air, composed of one fifth Oxygen, is passed through a discharge of electricity converting three molecules of O₂ into two molecules of O₃. It cannot be stored and has to be generated at the point of use.

How do you recognise it?

It is an unstable colourless gas trying to revert to Oxygen, but as Ozone it has a very distinctive smell, recognisable from experience of sparking electrical appliances, photocopier or even the smell during thunderstorms. It is a clean, rather metallic smell, sometimes associated with swimmingpools. It can be detected by smell in concentrations as low as 0.03 parts per million.

What are its advantages?

It is a powerful sterilising agent through the process of oxidation. It kills bacteria and fungi and also eliminates odours created by decaying bacteria.

There is no residual chemical.

As a gas, it reaches parts that other sterilising agents cannot reach and it is soluble in water. In low concentrations it has no effect on exposed food.

Where applicable, it suppresses ethylene – the fruit and produce “ripening” gas.

What are its disadvantages?

In general, none unless it is breathed in relatively high concentrations when it can cause symptoms such as dry mouth and coughing and later nausea. Health and Safety regulations allow 15 minutes exposure per day to a concentration of 0.3 PPM, but since it is detectable by smell at 0.03 PPM, problems are unlikely to occur.

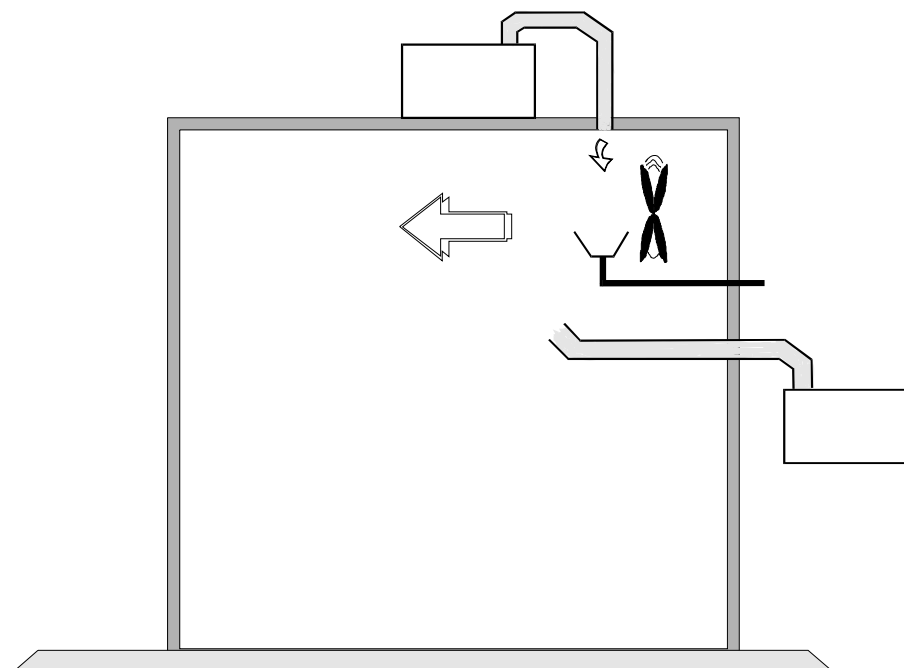
Installation in a ventilated roomAir inlet

Connect an 80 mm pipe from the room to the air inlet of the humidifier. The air of the room to the inlet should be as dry as possible. If the air is too cold and causes condensation create an extra opening in the inlet pipe to draw warmer air together with the cold air or use ambient air (in all cases when the rH > 75% and/or $\Delta T > 15$).

Mist outlet

Connect an pipe of at least 75 cm to the air outlet of the humidifier.

Install the pipework in a way that it is slightly sloped to the humidifier, so that any water runs down to the humidifier. The outlet of the pipe should point slightly upwards in front of the fan in the direction of the airflow. It is not necessary to glue the pipework, but be sure that it is connected in a way that condensed water can flow back, without leaking.



* For specific situations consult the Contronics technicians

Figure 6

Installation in a duct

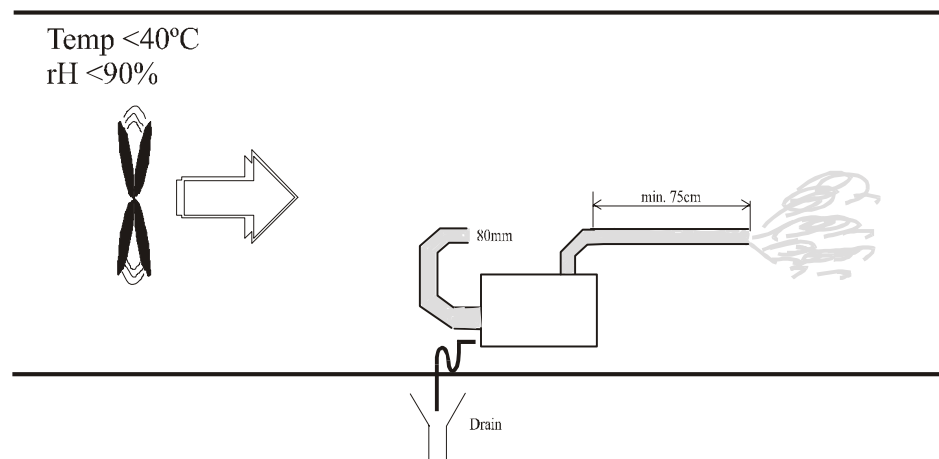
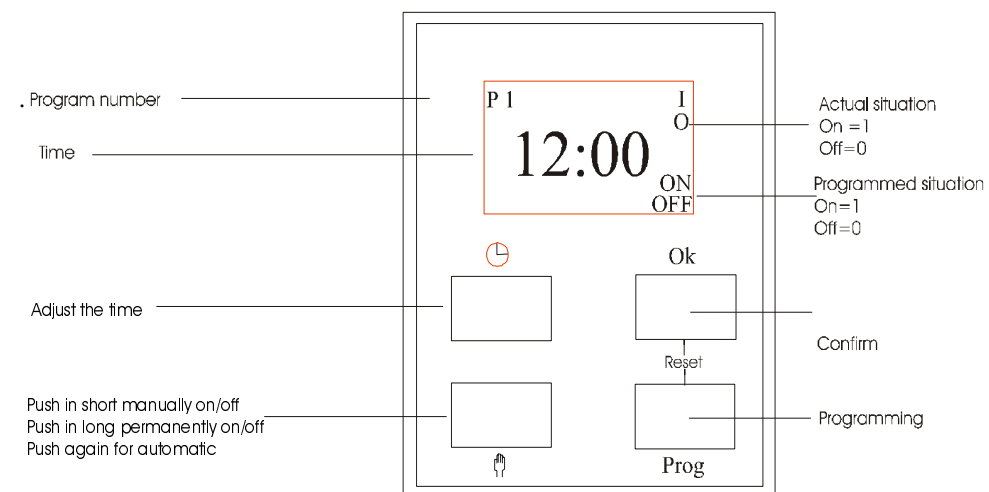


figure 7

- Create an additional outlet length of 75 cm per outlet in such a way that condensed water can flow back to the humidifier.
- Install pipework to the inlet in such a way that the inlet is in the same spot and in the same direction as the outlets to prevent an additional pressure differential inside the humidifier.
- The duct should have an unobstructed length of at least 2m¹ after the outlets for evaporation.
- Install a siphon in the waterdrain after the humidifier with a waterlock equal to the overpressure in the duct (1 cm H₂O ≈ 100 Pa)



In the above mentioned procedure, the ozone generator is started (while the humidification is switched off) at switching on. At switching off the opposite occurs.

If desired, it is also possible to run the ozone generator continuously. The timer will then only switch the humidifier.

In this case the following remarks are important:

- Ozone is less active, because most of the ozone is dissolved in the water particles.
- The ceramic plate that produces the actual ozone gas has to be replaced after 6 months of continuous use.
- When humidification fails, the ozone concentration in the display can reach to high a level.

What is ozone?

Ozone is an unstable gas made by passing Oxygen through a high voltage electrical discharge. The normal Oxygen (O₂) becomes Ozone (O₃) which immediately starts to revert back to Oxygen.

Push the prog button more than once to recall real time.(20 programs through)

7:00

Program check

Prog

Push in more than once. The programmed times appear consisting of program number, switching on- and switching-off time.

Erase a single program

Prog

Push in more than once until the program you want to erase appears.



Push in short. If you push it long a new time will be programmed. Watch out: switching-on and switching-off times, have to be erased separately.

Manual ozone



Push in short. The current state (on / off) will be changed when the next programmed state is reached. The program will be followed.

Permanent ozone



Push in for 2 seconds. "P:er" will appear in the display



Push in short once or twice to obtain the desired situation: permanent on /off

Delete permanent ozone



Push in for 2 seconds. "P:er" will disappear. Real time appears in the display



Push in short once or twice to the desired situation: on / off / automatic.

Installation parallel to a duct

Temp <40°C
rH <90%

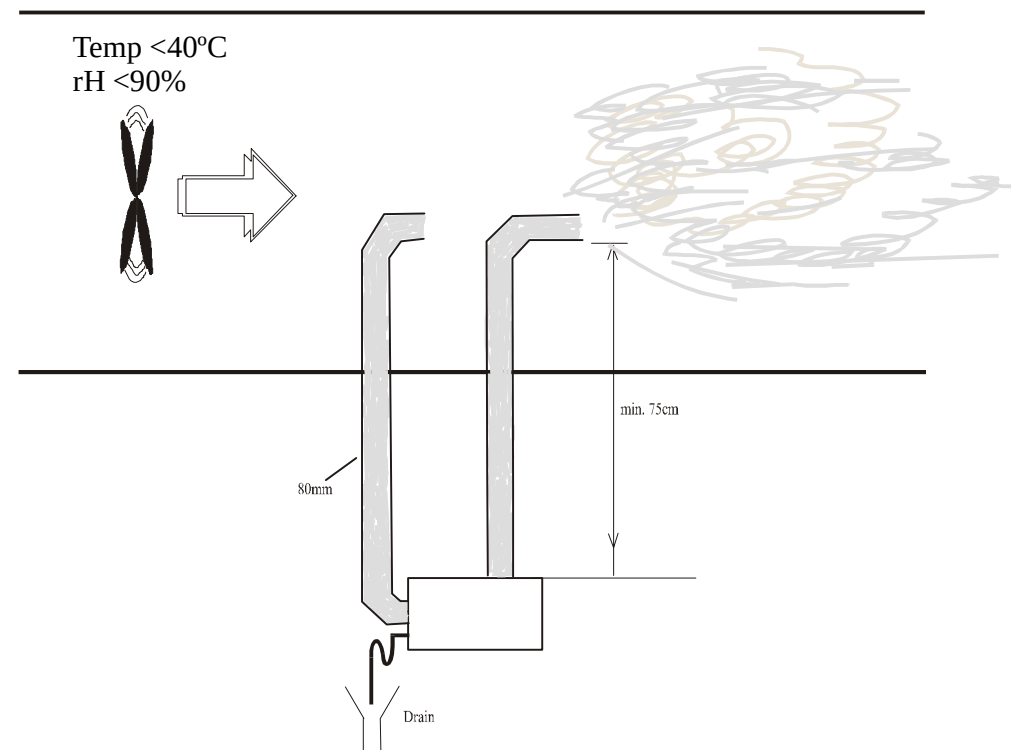
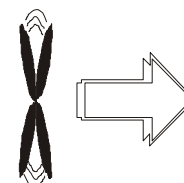


figure 8

- Create an additional outlet length of 75 cm per outlet in such a way that condensed water can flow back to the humidifier.
- Install pipework to the inlet in such a way that the inlet is in the same spot and in the same direction as the outlets to prevent an additional pressure differential inside the humidifier.
- The duct should have an unobstructed length of at least 2m¹ after the outlets for evaporation.
- Install a siphon in the waterdrain after the humidifier with a waterlock equal to the overpressure in the duct (1 cm H₂O ≈ 100 Pa)

OZONGENERATOR (OPTION)

The HU is also available with a built-in ozone generator (OG). Ozone kills bacteria in the humidifier and the connected piping.

Ozone is most effective when the humidifier is switched off during ozonizing. To control the on – off switching of the ozone generator and the humidifier, a programmable timer is installed in the side panel of the humidifier. The timer is factory programmed at 2 hours of ozonizing from 02.00 hrs till 04.00 hrs. This program may be altered (see programming the timer).

WARNING

Ozone can be dangerous to health when the gas is breathed in large concentrations for a longer period. These concentrations only occur in the humidifier and the connected pipework. After this the ozone falls apart into ordinary oxygen without residue.

The timer works independent of the main supply. The rechargeable battery to power the timer is built on the ozone PCB, inside the humidifier.

WARNING

When you change the battery, you should treat the old battery as chemical waste, or send it back to the manufacturer.

PROGRAMMING TIMER

The timer is Factory set at 2 hours ozonating from 02:00 till 04:00 (AM)

Starting up

OK

Prog

Keep pushed in for 3 sec. The timer starts, the double dot blinks. In case of a malfunction because of long storage and low battery, push in all 4 knobs. A test program will run after this. The timer is ready to be programmed.

Adjusting the clock



Push in short / long till the desired switch-on time is in the display.

OK

Confirm

Programming

Prog

Push in shortly. (Only for changing program)

- Programming the switch-on time

P1
7:00
ON



Push in short / long till the desired switch-on time is in the display

OK

Confirm

- Programming the switch-off time



Push in short / long till the desired switch-off time is in the display.

P1
7:00
OFF

OK

Confirm

The first program is now installed in the memory of the timer.

Ultrasonic Humidifier

Complete system with electronic hygostat.



Ideal humidification

- * Energy saving about 90% compared to steam humidification
- * Low noise
- * Can be controlled externally (0-10V), proportional regulation
- * Built-in ozone generator (option)

Specifications HU-45(OG)

Transducer frequency	1,7 MHz
Capacity at 25 °C water tank temperature	0 – 3 kg / hour (adjustable)
Transducer lifetime	10.000 hours (13 months continuously)
Measurement per waterparticle	1 – 3 micron
Diameter air outlet	4 x 40 mm or 1 x 80 mm with adapter (not included)
Diameter air inlet	80 mm
Airflow	adjustable (0 – 60 m ³ / 0 Pa)
Maximum length	12 mtr
Mains water pressure	1 – 6 BAR
Water connection	¾" external
Maximum water hardness	8° German hardness (demineralised water recommended)
Flushing frequency	once per hour (adjustable)
Water drain outlet	½" external
Watertank contents	650 cm ³
Mains supply	230V ± 10 % 50 / 60 Hz
Maximum load	250W
Ambient temperature	0 °C to 35 °C
Water temperature	5 °C to 15 °C
Air temperature	-5 °C to 35 °C
Ambient temperature in respect of air temperature	max. + 15K (max. 75 % rH)
Measurements (LxWxH)	325 x 265 x 215 mm
Weight	11,5 kg
Material	stainless steel 316L

HU-45OG (ozone generator built-in)

Capacity ozone	0 – 20 mg / hour (adjustable)
Controlling ozone	Timer

Accessories

HS-90P	Relative humidity sensor
HK-01	Connection cable and plug for external control (2 meters)
HK-02	Extension cable between the modules (2 meters)
LP-10	Reversed Osmosis unit
DZR-43	Dead zone hygrostat with digital readout for wall mounting
REMCO-12	Remote control
HU-FL80RVS	Adapter from 4 x 40 to 1 x 80 mm